

Maternal Awareness in the Risk Factors Attributed to Sudden Infant Death Syndrome: Descriptive Study

Ani Bebek Ölüm Sendromuna Atfedilen Risk Faktörlerinde Anne Farkındalığı: Tanımlayıcı Çalışma

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This study was presented as an oral presentation at 7th International Forensic Nursing Congress, May 8-10, 2023, Trabzon, Türkiye.

ABSTRACT Objective: The present study aimed to determine the awareness of mothers who have babies between 0-1 years of age about sudden infant death syndrome (SIDS) risk factors and to reveal their relationship with socio-demographic characteristics. **Material and Methods:** The universe of this descriptive study consisted of 120 mothers with infants aged 0-1 years who were admitted to the pediatric outpatient clinic of a university hospital and were hospitalized in pediatric services and neonatal intensive care units. The data of the research were collected by questionnaire method. The chi-square test was used to analyze whether there was a difference between the groups in terms of categorical variables. **Results:** According to the results, 55.8% of the mothers participating in the study were aged 30 and under, and 56.7% had a university or higher education. 11.7% of the mothers had a dead baby, 9.2% had relatives with SIDS, and 15.0% were smokers. 53.3% of the mothers did not receive any prior information about baby care, and 48.2% of them received information from health professionals. 68.3% of them put their baby in the right or left position, 59.2% of them put their baby on a soft bed, 10.0% of them covered their face while their baby was sleeping, and 55% of them stated that they did not know the risk factors for SIDS. **Conclusion:** The study found that mothers' awareness of SIDS risk factors was not at a sufficient level and socio-demographic characteristics of mothers should be considered as an important factor in approaching the baby.

Keywords: Sudden infant death syndrome; mothers; awareness; risk factors

ÖZET Amaç: Bu çalışmada, 0-1 yaş arası bebeğe sahip olan annelerin ani bebek ölümü sendromu (ABÖS) risk faktörleri konusundaki farkındalıklarını belirlemek ve sosyodemografik özelliklerle ilişkisini ortaya koymak amaçlanmıştır. **Gereç ve Yöntemler:** Tanımlayıcı olarak planlanan bu çalışmanın evrenini; bir üniversite hastanesinin çocuk polikliniğine başvuran, çocuk servisleri ve yenidoğan yoğun bakım servislerinde yatan ve 0-1 yaş dönemi bebeği olan 120 anne oluşturmuştur. Araştırmanın verileri anket yöntemi kullanılarak toplanmıştır. Kategorik değişkenler bakımından gruplar arasında farklılık olup olmadığı ki-kare testi ile analiz edilmiştir. **Bulgular:** Çalışmaya katılan annelerin %55,8'inin 30 yaş ve altında olduğu, %56,7'sinin üniversite ve üzeri eğitim aldıkları belirlendi. Annelerin %11,7'sinin ölen bebeğinin olduğu, %9,2'sinin akrabalarında ABÖS görüldüğü ve %15,0'ının sigara kullandığı saptandı. Annelerin %53,3'ü bebek bakımı konusunda önceden bilgi almadığını, bilgi alanların %48,2'si sağlık çalışanlarından bilgi aldığını belirtti. Annelerin %68,3'ü bebeğini sağ ya da sol pozisyonda yatırdığını, %59,2'si bebeğini yumuşak bir yatakta yatırdığını, %10,0'ı bebeği uyurken yüzünü örttüğünü ve %55,0'ı ABÖS risk faktörlerini bilmediğini belirtti. **Sonuç:** Annelerin ABÖS risk faktörleri konusundaki farkındalıklarının yeterli düzeyde olmadığı ve annelerin sosyodemografik özelliklerinin bebeğe yaklaşım konusunda önemli bir faktör olarak ele alınması gerektiği sonucuna varıldı.

Anahtar Kelimeler: Ani bebek ölümü sendromu; anneler; farkındalık; risk faktörleri

Sudden infant death syndrome (SIDS) is expressed as the unexpected and unexplained sudden death of infants under the age of one after a detailed investigation, clinical history, and autopsy examina-

tion.^{1,2} SIDS, which is associated with sleep, is also defined as sudden crib death or cot death.³ Although the etiology of SIDS cannot be fully explained, it is thought that many factors may cause this condition.

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Some of these factors are prone or side-lying position, using the same bed with the baby, sleeping on a soft surface, excessive heat, smoking of the mother during pregnancy, and late or no prenatal care.^{4,7} The World Health Organization states that more than half of the deaths of children under the age of five are in preventable conditions. It has been reported that almost a quarter of these deaths are in infants who die within their first year of life.^{8,9}

To prevent the formation of SIDS; it is recommended that mothers implement good prenatal care, prevent preterm and low-weight births, lay babies older than 32 weeks on their back, protect the baby from extreme heat, support breastfeeding, sleep in a separate bed with their parents, and to avoid smoking.¹⁰⁻¹² It was stated that there were 9.1 infant deaths per thousand live births in our country in 2019, 63.6% of infants died within the first month of life, and 86.9% died before completing five months. In addition, it has been stated that the rate of infants who die between 1-4 months is 23.3% in our country. It was observed that 12.3% of the babies died on the first day, 29.6% at 1-6 days, and 21.7% when they were 7-29 days old.¹³ In our country, there is no definitive data on SIDS risk factors, the data are not adequately recorded, and the information consists only of forensic medicine and pathology case reports.¹⁴ SIDS has been intensively researched in recent years. Despite the significant decrease in the prevalence of SIDS in the last 20 years as a result of the widespread use of campaigns to reduce the risks of SIDS, it continues to be a risk for babies under 1 year old in developed countries.^{1,6}

Sleep is a process in which the organism's specific activities occur, which constitutes two-thirds of the neonatal period, decreases with age, and covers one-third of the time in adult individuals.¹⁵ The American Academy of Pediatrics recommends a safe sleep environment that can reduce the risk of all sleep-related infant deaths. Suggestions for a safe sleeping environment include; a supine position, using a hard sleeping surface, room sharing without bed sharing, not using the soft bed, and avoiding overheating. Additional recommendations for reducing SIDS include; avoiding exposure to cigarettes, alcohol, and illicit drugs, and also breastfeeding,

routine immunization, naps, and using a pacifier during sleep.¹⁶ For healthy sleep in children, external factors that may negatively affect sleep should be regulated. Usually families; to prevent the possibility of their children getting cold during the winter months, wear very thick clothes during sleep and cover them well. However, this increases the risk of SIDS and sleep-related drowning.^{17,18} In the baby care services that are planned to be given to families, it is first necessary to determine the knowledge level and awareness of mothers on SIDS. Therefore, in this research, it was aimed to determine the awareness of mothers with 0-1 year olds babies who applied to the pediatric outpatient clinic of a university hospital, who were hospitalized in pediatric services and neonatal intensive care units, about SIDS risk factors and to reveal their relationship with socio-demographic characteristics.

MATERIAL AND METHODS

This research was carried out in a descriptive and relationship-determining manner to evaluate the awareness of mothers with 0-1 year-old infants about SIDS risk factors and to reveal their relationship with socio-demographic variables. The universe of the study consisted of 120 mothers with babies aged 0-1 year, who were admitted to the pediatric outpatient clinic of a university hospital between December 2022 and May 2023 and were hospitalized in pediatric services and neonatal intensive care units.

In the present study, the mother's socio-demographic information form, the baby's information form, and the SIDS risk factors form developed by the researchers in line with the literature were used. Information form for mothers consisted of a 20-question survey form with mothers' age, education level, graduation status, occupation, income status, family structure, number of children, etc. The information form for the baby consisted of a 9-question survey form with the baby's gender, in which week he/she was born, birth weight, how old he/she is, whether he/she is breastfed, etc. The SIDS risk factors form consisted of a questionnaire consisting of 2 multiple-choice and 19 yes/no questions, prepared in line with the literature, including risky behaviors of mothers on SIDS.¹⁹

This study was conducted according to the guidelines in the Declaration of Helsinki, and all procedures involving participants were approved by the Research Ethics Committee of Avrasya University on 16 November 2022 with protocol number 2022/58. All mothers gave informed consent to participate in the study voluntarily.

SPSS 26.0 [SPSS Statistics 26 Soft., IBM (Armonk, NY; IBM Co.)] package program was used in the analysis of the data. The data of the study, number, and percentage distributions are presented with the mean standard deviation. The chi-square test was used to analyze whether there was a difference between the groups in terms of categorical variables. In all analyses, $p < 0.05$ was considered statistically significant.

RESULTS

According to the results, 55.8% of the mothers participating in the study were 30 years old or younger, their mean age was 31.05 ± 5.5 years, and 56.7% of them were university graduates. It was determined that 67.5% of the mothers did not work in any job and 51.7% of them had income equal to their expenses. 11.7% of the mothers had a dead baby and 9.2% had relatives with SIDS. The rate of mothers who received information about baby care before or after birth was 46.7% (Table 1). When the information about babies is evaluated; 54.2% of the mothers participating in the study had a baby girl, 70.0% had a baby by cesarean section, and 85.0% of them stated that they gave birth to their baby between 38-42 weeks of gestation. 90.8% of the babies had a birth weight of 2,500 grams and above, and 77.5% of them were between 5-12 months of age. 69.2% of the infants were still breastfeeding, and 40.6% of the infants who stopped taking breast milk stopped taking milk between 0-3 months (Table 2).

Most of the mothers stated that they put the baby on the right or left side while sleeping, prefer to use a soft bed while the baby is sleeping, and generally do not cover the baby's face while sleeping. Most of the mothers stated that they did not use a pacifier while the baby was sleeping and did not keep any toys in the baby's bed. It was observed that mothers mostly

TABLE 1: Socio-demographic characteristics and other information of mothers.

Characteristics		n	%
Age group	≤30 years	67	55.8
	≥31 years	53	44.2
Educational status	Secondary school and below	14	11.6
	High school	38	31.7
	University	68	56.7
Working status	Working	39	32.5
	Not working	81	67.5
Income level	Income less than expenses	25	20.8
	Income equals expense	62	51.7
	Income more than expenses	33	27.5
Family type	Extended family	10	8.3
	Nuclear family	110	91.7
Job	Officer	28	23.3
	Employee	9	7.5
	Farmer	2	1.7
	Housewife	81	67.5
Number of births	1	55	45.8
	2	42	35.0
	3 and above	23	19.2
Number of living children	1	59	49.2
	2	43	35.8
	3 and above	18	15.0
Birth frequency	One year and below	25	20.8
	Once in two years	25	20.8
	Three years and above	70	58.4
Consanguineous marriage	Yes	10	8.3
	No	110	91.7
Dying baby status	Yes	14	11.7
	No	106	88.3
Sudden infant death syndrome status in relatives	Yes	11	9.2
	No	109	90.8
Smoking	Yes	18	15.0
	No	102	85.0
Spouse's smoking	Yes	59	49.2
	No	61	50.8
Alcohol consumption	Yes	1	0.8
	No	119	99.2
Spouse's alcohol consumption	Yes	15	12.5
	No	105	87.5
Status of obtaining prior information on baby care	Yes	56	46.7
	No	64	53.3
Source of information on baby care	Health provider	27	48.2
	Family elder	19	33.9
	TV, newspaper, internet	10	17.9
Chronic disease	Yes	11	9.2
	No	109	90.8
Sickness during pregnancy	Yes	34	28.3
	No	86	71.7

TABLE 2: Distribution of baby information.

Characteristics		n	%
Baby's gender	Girl	65	54.2
	Boy	55	45.8
Baby's birth type	Normal	36	30.0
	Cesarean section	84	70.0
Pregnancy week when the baby is born	≤37 weeks	18	15.0
	38-42 weeks	102	85.0
Baby's birth weight	<2,500 grams	11	9.2
	≥2,500 grams	109	90.8
Baby's age	1 month and below	4	3.3
	2-4 months	23	19.2
	5-12 months	93	77.5
Baby's breastfeeding status	Yes	83	69.2
	No	37	30.8
Breastfeeding duration of the baby who doesn't get breastmilk	0-3 months	15	40.6
	3-6 months	10	27.0
	6-9 months	6	16.2
	9-12 months	6	16.2
Baby's health problem at birth	Yes	17	14.2
	No	103	85.8
General health of the baby	Healthy	78	65.0
	Gets sick sometimes	30	25.0
	Gets sick often	12	10.0

did not smoke during pregnancy and breastfeeding period, but 46.7% of them had a smoker at home. Most of the mothers stated that they slept in the same room with their babies but in separate beds, and they mostly put their babies in the head or middle part of the crib. Most of the mothers did not use a thermometer to measure the temperature of the room where the baby was in and they did not know enough about SIDS and its risks (Table 3).

Most mothers with secondary school education and below lay their baby on their right or left side while sleeping, prefer to lay their baby on a soft bed and cover their face while the baby is sleeping. A significant difference was observed between mothers' smoking status at home and their educational status. It was determined that the mothers who frequently ventilate the baby's room and cover the baby by lightening their clothes while sleeping are mostly university graduate mothers. There was a significant difference between the frequent ventilation of the

TABLE 3: Awareness of mothers on sudden infant death syndrome risk factors.

Questions	Answers	n	%
Which position do you put your baby while sleeping?	Face down	8	6.7
	To the right or left side	82	68.3
	Supine	30	25.0
How is your baby's bed?	Hard	49	40.8
	Soft	71	59.2
Do you cover your baby's face while sleeping?	Yes	12	10.0
	No	108	90.0
Do you use a pacifier while your baby is sleeping?	Yes	39	32.5
	No	81	67.5
Do you keep toys in your baby's bed?	Yes	16	13.3
	No	104	86.7
Did you smoke during pregnancy?	Yes	3	2.5
	No	117	97.5
Did you smoke while breastfeeding?	Yes	6	5.0
	No	114	95.0
Are there any smokers in your home?	Yes	56	46.7
	No	64	53.3
Does your baby sleep in their own bed in the same room with you?	Yes	99	82.5
	No	21	17.5
Does your baby sleep in the same bed with you?	Yes	14	11.7
	No	106	88.3
Does your baby sleep in a different room with you?	Yes	18	15.0
	No	102	85.0
Do you put your baby in the head or middle part of the crib?	Yes	110	91.7
	No	10	8.3
Do you put your baby in the lower end of the crib?	Yes	7	5.8
	No	113	94.2
Do you often check on your baby during sleep?	Yes	103	85.8
	No	17	14.2
Do you tuck your baby's quilt on the sides of the bed?	Yes	23	19.2
	No	97	80.8
Do you tuck your baby's sheet around the edges of bed by stretching?	Yes	105	87.5
	No	15	12.5
Do you often ventilate your baby's room?	Yes	118	98.3
	No	2	1.7
Do you lighten your baby's clothes and cover him while he sleeps?	Yes	94	78.3
	No	26	21.7
Do you take your baby for regular health check-ups?	Yes	119	99.2
	No	1	0.8
Do you use a thermometer for measurement your baby's room temperature?	Yes	41	34.2
	No	79	65.8
Do you know sudden infant death syndrome and its risks?	Yes	54	45.0
	No	66	55.0

baby's room and the education status of the mothers. It was determined that mothers who had regular health check-ups for their babies and who measured the temperature of their baby's room with a ther-

mometer were mostly university graduates. There was a significant difference between the mothers' levels of measuring the baby's room temperature with a thermometer and their educational status. It was observed that the university graduate mothers

were more conscious than the other mothers about SIDS and risk factors. A significant difference was determined between the levels of knowing SIDS and its risks and the education levels of the mothers ($p < 0.05$, Table 4).

TABLE 4: Awareness of mothers on SIDS risk factors according to their education level.

		Educational status								Statistics	
		Secondary school \geq		High school		University		Total			
		n	%	n	%	n	%	n	%		
Laying position while baby sleeps	Facedown	0	0.0	4	10.5	4	5.9	8	6.7	2.810	0.590
	Side	10	71.4	25	65.8	47	69.1	82	68.3		
	Supine	4	28.6	9	23.7	17	25.0	30	25.0		
Baby's bed type	Hard	3	21.4	12	31.6	34	50.0	49	40.8	5.894	0.052
	Soft	11	78.6	26	68.4	34	50.0	71	59.2		
Covering the baby's face	Yes	4	28.6	2	5.3	6	8.8	12	10.0	5.010	0.082
	No	10	71.4	36	94.7	62	91.2	108	90.0		
Using a pacifier while baby sleeps	Yes	4	28.6	10	26.3	25	36.8	39	32.5	1.340	0.512
	No	10	71.4	28	73.7	43	63.2	81	67.5		
Putting toys on baby's bed	Yes	2	14.3	2	5.3	12	17.6	16	13.3	3.712	0.156
	No	12	85.7	36	94.7	56	82.4	104	86.7		
Smoking during pregnancy	Yes	0	0.0	1	2.6	2	2.9	3	2.5	0.763	0.683
	No	14	100.0	37	97.4	66	97.1	117	97.5		
Smoking while breastfeeding	Yes	0	0.0	4	10.5	2	2.9	6	5.0	4.024	0.134
	No	14	100.0	34	89.5	66	97.1	114	95.0		
Being a smoker at home	Yes	2	14.3	22	57.9	32	47.1	56	46.7	7.827	0.020
	No	12	85.7	16	42.1	36	52.9	64	53.3		
Sleeping in different bed with baby	Yes	13	92.9	31	81.6	55	80.9	99	82.5	1.425	0.490
	No	1	7.1	7	18.4	13	19.1	21	17.5		
Sleeping in same bed with baby	Yes	1	7.1	4	10.5	9	13.2	14	11.7	0.523	0.770
	No	13	92.9	34	89.5	59	86.8	106	88.3		
Sleeping in different room with baby	Yes	3	21.4	6	15.8	9	13.2	18	15.0	0.600	0.741
	No	11	78.6	32	84.2	59	86.8	102	85.0		
Laying baby in the head/middle of crib	Yes	14	100.0	33	86.8	63	92.6	110	91.7	3.524	0.172
	No	0	0.0	5	13.2	5	7.4	10	8.3		
Laying baby in the lower end of crib	Yes	0	0.0	4	10.5	3	4.4	7	5.8	3.201	0.202
	No	14	100.0	34	89.5	65	95.6	113	94.2		
Checking the baby often while sleeping	Yes	12	85.7	35	92.1	56	82.4	103	85.8	2.065	0.356
	No	2	14.3	3	7.9	12	17.6	17	14.2		
Tightening baby's comforter to bed	Yes	3	21.4	4	10.5	16	23.5	23	19.2	2.949	0.229
	No	11	78.6	34	89.5	52	76.5	97	80.8		
Squeezing the baby sheet into the bed	Yes	12	85.7	32	84.2	61	89.7	105	87.5	0.710	0.701
	No	2	14.3	6	15.8	7	10.3	15	12.5		
Airing the baby's room frequently	Yes	12	85.7	38	100.0	68	100.0	118	98.3	8.861	0.012
	No	2	14.3	0	0.0	0	0.0	2	1.7		
Reducing clothes while baby sleeps	Yes	9	64.3	27	71.1	58	85.3	94	78.3	4.671	0.097
	No	5	35.7	11	28.9	10	14.7	26	21.7		
Regular health check of the baby	Yes	13	92.9	38	100.0	68	100.0	119	99.2	4.362	0.113
	No	1	7.1	0	0.0	0	0.0	1	0.8		
Measuring room heat with thermometer	Yes	1	7.1	14	36.8	26	38.2	41	34.2	6.423	0.040
	No	13	92.9	24	63.2	42	61.8	79	65.8		
Knowing SIDS and its risks	Yes	2	14.3	17	44.7	35	51.5	54	45.0	6.488	0.039
	No	12	85.7	21	55.3	33	48.5	66	55.0		

SIDS: Sudden infant death syndrome.

DISCUSSION

The present study is a descriptive study aimed to determine the awareness about SIDS risk factors of mothers have 0-1 year-old babies, who applied to the pediatric outpatient clinic of a university hospital serving a wide region where patients with different socio-cultural characteristics are diagnosed and treated, and who were hospitalized in pediatric services and neonatal intensive care units. The sleeping position of the baby is accepted as the most important risk factor for SIDS. The risk of SIDS is higher in babies who sleep on their prone or side positions.^{20,21} The American Academy of Pediatrics recommends that infants be placed in the supine position for the first year.¹⁶ Infants placed in the supine position are at less risk than infants placed in the side position.^{22,23} In our study, it was observed that mothers usually lay their babies in the side position while sleeping, and they preferred a softer bed for their babies. Therefore, it was determined that these practices performed by the mothers were not correct in terms of SIDS risks. For a safe sleeping environment, the baby should be placed in a supine position, on a not very soft bed, and there should be no pillows, quilts, blankets, or covers around the child in the bed.^{16,24} It is seen that the mothers participating in our study do not have sufficient awareness of this issue. Putting toys and similar materials on the baby's bed can be seen in the behavior of the mothers who participated in our study, albeit to a lesser extent. Sleeping with a pillow or other material is a habit for adults, and it should be known that the baby can sleep comfortably even when not using a pillow, and pillows and similar items should not be used in the cot/crib of babies younger than one-year-old. Such materials can both cause the baby to suffocate and pose a risk for SIDS.^{25,26}

The mother's smoking and being under the age of 20 are considered among the most important risk factors for the mother. These factors double the risk of SIDS, according to the National Institute of Child Health and Human Development. Maternal smoking is an important risk factor for SIDS, and SIDS rates increase with the amount of cigarettes smoked.²⁷ Especially the mother's smoking during pregnancy in-

creases the risk of SIDS, but the exposure of a baby to cigarette smoke is an additional independent risk factor. In many studies, harmful substance and alcohol use by the mother was found to be highly associated with SIDS.^{28,29} It is not fully known whether this relationship is the biological effect of drugs used during pregnancy, preterm birth, low birth weight of the baby, and other postpartum conditions.³⁰ In addition, the mother's low education level and being single were also found to be risk factors for SIDS.³¹ It is stated that exposure to strong tobacco smoke in the prenatal period affects the baby's brain stem and causes epigenetic changes during development. In addition, it has been emphasized that it slows the recovery of hypoxia in preterm infants and reduces heart rate variability by changing the normal programming of cardiovascular reflexes in premature and term infants.¹⁶ Although pregnant women who smoke give birth at term, their babies are born smaller than normal. The rate of SIDS was found to be quite high in babies born in homes with smoking.³² As a result of our research, while the rate of smoking and alcohol use by mothers during pregnancy and breastfeeding their baby was low, the rate of having someone who used cigarettes and alcohol at home was higher. This shows that parents do not pay enough attention to infant health and SIDS risks. In addition, it is thought that the low smoking rate of the mothers participating in our study, the rarity of low birth weight in infants, and the low number of mothers aged 20 years and younger significantly reduce the risk of encountering SIDS for mothers.

Health personnel, especially pediatric nurses, have important duties in creating a safe sleeping environment for mothers with babies under the age of one, knowing the risk factors of SIDS, and learning preventive practices for the formation of SIDS. In this respect, pediatric nurses are recommended to provide education and support to families to eliminate the lack of knowledge about creating a safe sleep environment and to prevent risky practices.^{33,34} In our study, it was determined that almost half of the mothers had prior knowledge about baby care, and it was seen that the most information source was health providers. Nurses need to inform parents about the risks of SIDS, ways of protection and prevention, and

to provide supportive care within the scope of their educational roles.³⁵ Evidence-based practices should be used to create safe sleeping environments. In the training to be given by nurses, it is necessary to tell parents about current evidence-based practices, not their own thoughts or traditional practices. Since parents tend to get information from nurses, it is important to share evidence-based information and practices with them.

CONCLUSION

As a result of our research, it has been seen that mothers do not have a sufficient level of awareness about SIDS risk factors, and the socio-demographic characteristics of mothers, especially maternal age and educational status should be considered as important factors in the care given to infants. Also, it seems that providing information to mothers by healthcare personnel is an important factor in reducing the risk of SIDS. In previous studies, it has been revealed that SIDS can be prevented to a largely extent with the measures taken for preventable risk factors. For this reason, this study revealed the importance of providing effective education to the family and the people responsible for the child's care. There is no currently structured prevention program for preventing SIDS in our country. For this reason, it is considered important to develop a structured prevention program to prevent SIDS, especially in terms of providing

training to mothers and health workers on this subject. Furthermore, a regular health education program should be organized by a medical personnel in the neonatal care unit and on every health visit for the newborn in his first year to improve knowledge and practices of mothers who have just given birth regarding SIDS prevention and safe sleep environments.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

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